# CONSERVATION AGREEMENT

# AND

# CONSERVATION STRATEGY

**COLUMBIA SPOTTED FROG (*RANA LUTEIVENTRIS*)**
**TOIYABE**
**GREAT BASIN SUBPOPULATION**
**NEVADA**

**SEPTEMBER** **2003**

**TABLE OF CONTENTS**

Page



CONSERVATION AGREEMENT
FOR THE
TOIYABE SUBPOPULATION OF THE
COLUMBIA SPOTTED FROG



CONSERVATION STRATEGY
FOR THE
TOIYABE SUBPOPULATION OF THE
COLUMBIA SPOTTED FROG

## List of Tables



## List of Figures

# GLOSSARY OF TERMS

***Adaptive management:*** Adaptive management is designed to bring new information immediately into management decisions. The effectiveness of all conservation measures and monitoring methods will be periodically reviewed and evaluated by the implementing cooperators through the TSFTT. Based on such evaluation, appropriate modifications to methods, actions and strategies will be made to ensure scientific rigor and the efficacy of conservation measures.

***Candidate species:*** Those species for which the USFWS has, on file, sufficient information on biological vulnerability and threats to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded by higher listing priorities.

***Co-lead responsibility:*** Participant and signatory to the CAS with shared responsibility with one or more other participants to insure an identified conservation action or activity will be implemented.

***Connectivity:*** Pathways across and through aquatic or terrestrial blocks of habitat which facilitate and maintain the interchange of individual animals among sub-populations.

***Conservation action:*** An action taken to conserve or preserve natural resources.

***Conservation unit:*** A group of *population units* that either exhibit connectivity or are not separated by known barriers. Connectivity can be by perennial or intermittent flowing water or by landscape features that permit dispersal.

***Disease:*** Pathogenic infection of an organism from an external source which may have a chronic or acute negative effect on that organism at an individual or population level.

***Distinct population segment:*** A *population unit* that can be defined as geographically and/or genetically discrete and distinct for the purpose of listing consideration under the Endangered Species Act.

***Fragmentation:*** The disruption of extensive habitats into isolated and/or small patches.

***Historic range:*** An area inhabited by Columbia spotted frogs at the time of modern exploration and settlement, as verified by museum voucher.

***Inventory:*** The process of conducting surveys to determine the total distribution and abundance.

***Lead responsibility:*** Participant and signatory to the CAS with primary responsibility to insure an identified conservation action or activity will be implemented.

***Lentic:*** Standing water habitats, including natural and beaver ponds, wetlands and impoundments.

***Lotic:*** Flowing water habitats such as streams and rivers.

***Metapopulation:*** A *conservation unit* in which metapopulation characteristics, such as a source/sink relationship, have been demonstrated to occur, or *population units* that are interconnected within the same drainage systems and are interdependent.

***Monitoring:*** Study of the abundance of individuals in one or more populations of a species at a site through time.

***Native:*** A species that historically occurred in a specific area or habitat.

***Non-native:*** A species that historically did not occur in a specific area or habitat and that now inhabits as a result of human actions. Also known as an exotic species.

***Occupied habitat:*** Areas of habitat where the presence of Columbia spotted frogs has been documented within 1 to 10 years, recognizing that year-to-year occurrence can be highly variable dependent upon metapopulation dynamics and other factors.

***Participant/cooperator:*** Any entity which assists in the development and implementation of conservation actions, whether or not a signatory to the CAS

***Potential habitat:*** Areas which contain one or more key elements of Columbia spotted frog habitat or to which those elements could be restored, but which are not now occupied habitat, including areas which have not been surveyed to determine frog presence.

***Population:*** A particular species in a particular group or in a definable place (i.e., the Great Basin *population* of Columbia spotted frogs).

***Population unit:*** A local population of randomly breeding individuals. A population unit typically occupies a single breeding site, such as a single or a small group of ponds.

***Predation:*** The capture and consumption of one animal by another, which applies to all life stages of the organism.

***Protocol:*** A procedure for monitoring or other activity which conforms to standard biological practices and has been identified by the TSFTT as an accepted standardized methodology for conducting that activity.

***Relict:*** A persistent remnant of an otherwise extinct (locally or globally) organism.
***Restoration:*** Specific actions taken to improve or restore habitat or associated ecosystems to potential natural conditions.

***Sentinel Site:*** Specific location for defined, periodic monitoring of animals or habitat which provides benchmark data for assessing changes in status or condition.

***Sink:*** A habitat in which local mortality exceeds local reproductive success.

***Source:*** A habitat in which local reproductive success exceeds local mortality.

***Source population:*** An actively breeding population that has an average birth rate that exceeds its average death rate, and thus produces an excess of animals that may disperse to other areas

***Species Management Plan:*** Guidance document prepared by one or more participants which identifies detailed actions and activities for conservation of the spotted frog throughout its range, subject to Adaptive Management review by the TSFTT.

***Species Monitoring Plan:*** Guidance document prepared by one or more participants which defines the structure, timing, protocols, and locations for short- and long-term population monitoring, subject to Adaptive Management review by the TSFTT.

***Subpopulation:*** A geographically distinct population segment (e.g., Jarbidge-Independence, Ruby, Toiyabe).

***Survey:*** Field survey to determine an organism's distribution and abundance in potential habitat.

***Threats:*** Ongoing or potential actions having negative or potential negative impacts to an organism or its habitat.

***Viable population:*** A population that maintains its reproductive vigor and its potential for evolutionary adaptation.

## ACKNOWLEDGMENTS

The final Conservation Agreement for the Toiyabe subpopulation of the Columbia spotted frog was prepared by the Toiyabe Spotted Frog Technical Team (TSFTT). Each member of the TSFTT provided valuable information and assistance in development of the document.

Brigham Young University: Dr. Kent Hatch
Bureau of Land Management: Lance Brown, Rhen Etzelmiller, Randy McNatt
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Nevada Natural Heritage Program: Glenn Clemmer, Jennifer Newmark
Nye County: Dr. James Marble
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The spotted frog illustration on the cover page was provided courtesy of the Toronto Zoo.

# CONSERVATION AGREEMENT FOR THE TOIYABE SUBPOPULATION OF THE COLUMBIA SPOTTED FROG (*Rana luteiventris*)

## PURPOSE

This Conservation Agreement (Agreement) has been developed to expedite implementation of conservation measures for the Columbia spotted frog *(Rana luteiventris)* in the Toiyabe Range, Nevada (Toiyabe spotted frog), as a collaborative and cooperative effort among resource agencies, governments, and land owners. The desired outcome is to ensure the long-term conservation of the Toiyabe spotted frog within its historic range, and to contribute to development of statewide conservation efforts for the Great Basin population of the species. The parties to this Agreement believe that implementing the conservation measures herein defined will benefit the Toiyabe spotted frog and could reduce the likelihood for its listing under the Endangered Species Act of 1973, as amended (ESA). Threats that could lead to Toiyabe spotted frog listing as threatened or endangered under the ESA, should be significantly reduced or eliminated through full implementation of the Conservation Agreement and Strategy (CAS). This Agreement may provide additional measures to enhance habitats for the Toiyabe spotted frog that would not be required under the ESA.

## CONSERVATION GOALS OF THE AGREEMENT

Conservation measures needed to ensure the long-term viability and conservation of the Toiyabe spotted frog focus on two goals:

*Goal 1*

To reduce threats to Toiyabe spotted frogs and their habitat to the extent necessary to prevent population units from becoming extirpated throughout all or a portion of their historic range.

*Goal 2*

To maintain, enhance, and restore a sufficient number of population units of Toiyabe spotted frogs and their habitat to ensure their continued existence throughout their historic range.

These goals will be achieved through implementation of specific measures set forth below and in the Conservation Strategy (Strategy). The status of the Toiyabe spotted frog will be evaluated annually by the Toiyabe Spotted Frog Technical Team (TSFTT) composed of signatories to this agreement and other interested parties, through an adaptive management framework to assess program progress.

## CONSERVATION OBJECTIVES

The following conservation objectives will be implemented to reach the goals of the CAS stated above, and are targeted to specific goals as indicated parenthetically below. Included with the objective is a statement on how the objective will benefit the Toiyabe spotted frog and a standard to determine if the objective was successful at achieving the goal. The conservation actions and commitments by the Cooperators as described in the CAS will be implemented as proposed in the Strategy.

**Objective 1. Determine the overall distribution of Toiyabe spotted frogs.** (Goal 2)

Benefit: Understand range and habitat conditions in which Toiyabe spotted frogs exist (Baseline for Objective 2).

Success Standard: Completed inventories of all known and historic sites using standard protocol and data entered into a centralized database. Inventories will be documented in annual reports. This objective will be completed within the first five years of CAS implementation.

**Objective 2. Assess the abundance of Toiyabe spotted frogs, habitat conditions and existing and potential threats at occupied sites.** (Goal 1)

Benefit: Enable biologists and managers to identify changes in Toiyabe spotted frog populations and implement appropriate management to reverse declines in Toiyabe spotted frog numbers and correlate habitat degradation with declining Toiyabe spotted frog populations.

Success Standard: Develop and implement a Toiyabe Spotted Frog Monitoring Plan incorporating a long-term population monitoring program for the purpose of establishing a population baseline and initial population trends within the known range of this subpopulation. Surveys are conducted annually and on a long-term basis. Identify the range of habitat conditions which are optimum to allow Toiyabe spotted frog persistence. Monitoring and assessment activities are documented in annual reports. This objective will be ongoing throughout the 10 year life of the CAS.

**Objective 3. Ensure that viable populations and their habitats are managed and enhanced to ensure the continued existence of Toiyabe spotted frogs throughout their historic range.** (Goal 2)

Benefit: Long term persistence and viability of spotted frog metapopulations and suitable habitat across the range of the Toiyabe spotted frog.

Success Standard: Maintain appropriate level of legal protection. Enforce public land management regulations and policies. Develop a Toiyabe Spotted Frog Species Management Plan. Implement identified strategies and modify them as needed based on new information using adaptive management. Validate threats and implement strategies to reduce or eliminate their effects. Maintain source populations and key occupied habitats. Restore habitat conditions

conducive to establishment of new Toiyabe spotted frog population units and that encourage connectivity. This objective will be ongoing throughout the 10 year life of the CAS.

**Objective 4. Conduct research that directly supports conservation and management of Toiyabe spotted frogs and their habitat.** (Goal 2)

Benefit: Provide information on basic ecology, threats, and evaluation of management practices needed for adaptive management.

Success Standard: Maintain active research program focused on needs identified by the TSFTT and ensure findings are evaluated and applied to management strategies. Research findings and their applications are documented in annual reports. This objective will be ongoing throughout the 10 year life of the CAS.

**Objective 5. Implement through administrative procedures the CAS and incorporate provisions of the Strategy into agency planning documents and budgets to ensure the goals are met in a consistent manner.** (Goal 2)

Benefit: Ensures consistent implementation and funding of CAS actions and activities according to timeline. Prioritizes Toiyabe spotted frog conservation actions into land use planning and land use decisions.

Success Standard: Ensure that land use plans are consistent with CAS actions. Funding is consistently allocated towards Toiyabe spotted frog conservation actions. Cooperators are actively participating in administrative requirements of CAS. This objective will be ongoing throughout the 10 year life of the CAS.

**Objective 6. Develop and Implement an adaptive management framework partnership.** (Goal 2)

Benefit: Provide focused management and the basis for adaptive management by periodically assessing the effectiveness of conservation actions. Modify strategies and actions as necessary to achieve the conservation goals and objectives of the CAS.

Success Standard: Cooperators are involved in conservation efforts pursuant to the CAS. The TSFTT is meeting semiannually as defined in the Agreement to provide management and conservation recommendations through the adaptive management process. Adaptive management implementation will be documented annually. CAS progress will be documented through annual action plans and reports. This objective will be ongoing throughout the 10 year life of the CAS.

**Objective 7. Support the CAS by increasing public awareness and appreciation for Toiyabe spotted frogs and their habitat, and by making data and information available to interested parties and decision makers.** (Goal 2)

Benefit: Enhanced public awareness and appreciation may increase conservation of Toiyabe spotted frogs and habitats on public and private lands. A central repository will enable cooperators to have access to the same information and will benefit the coordination of research and conservation efforts.

Success standard: Cooperators implement and maintain information delivery on the Toiyabe spotted frog as identified in the strategy to landowners and the general public. Cooperators implement and maintain an active program to encourage volunteer public and private land conservation efforts. A central data repository is established and maintained for the life of the program. Management and conservation of the Toiyabe spotted frog is coordinated with actions for other sensitive and resident wildlife species. This objective will be ongoing throughout the 10 year life of the CAS.

## OTHER SPECIES INVOLVED

The primary focus of this Agreement is the conservation and enhancement of the Toiyabe spotted frog and the ecosystems upon which it depends. The needs of listed species and other species of concern (Appendix A), as well as species that are native to the area will be considered in planning and designing management actions to benefit the Toiyabe spotted frog.

## SIGNATORY PARTIES

Bureau of Land Management, 1340 Financial Boulevard, Reno, Nevada

Nevada Department of Wildlife, 1100 Valley Road, Reno, Nevada

Nevada Natural Heritage Program, 1550 East College Parkway, Suite 137, Carson City, Nevada

Nye County, 101 Radar Road, P.O. Box 1767, Tonopah, Nevada

U.S. Fish and Wildlife Service, 1340 Financial Boulevard, Suite 234, Reno, Nevada

U.S. Forest Service, 1200 Franklin Way, Sparks, Nevada

## ADDITIONAL PARTICIPANT/COOPERATORS

Biological Resources Research Center, University of Nevada, Reno, Nevada

Department of Integrative Biology, Brigham Young University, Provo, Utah

Yomba Shoshone Tribe, James Birchum, Chairman, HC61 Box 6275, Austin, Nevada

U.S. Geological Survey, Forest and Rangeland Ecosystem Science Center, 3200 SW Jefferson Way, Corvallis, Oregon

Separate Agreements will be developed with additional parties as necessary to ensure implementation of specific conservation measures. Additional populations of the Great Basin spotted frog exist in Idaho, and Oregon. The Nevada Department of Wildlife (NDOW) holds regulatory authority for management of the Toiyabe spotted frog in Nevada as resident wildlife. The Forest Service will maintain the lead Federal role in the implementation of habitat conservation and restoration activities for the Toiyabe spotted frog because the majority of Toiyabe spotted frog habitat is in their management authority. The TSFTT will cooperate and coordinate with other states, and with other Columbia spotted frog conservation efforts in Nevada as needed in the implementation of this Agreement.

## AUTHORITIES

The signatory parties hereto enter into this Agreement under federal and state laws as applicable, including but not limited to, section 6(c)(1) of the Endangered Species Act of 1973, as amended, and sections 501.351 and 503.584 of Nevada Revised Statutes (NRS). This Agreement is subject to and is intended to be consistent with all applicable federal and state laws.

Section 6(c)(1) of ESA provides encouragement to the states and other interested parties, through federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards. This is a key to meeting the United States' international commitments and to better safeguard, for the benefit of all citizens, the Nation's heritage in wildlife and plants.

NRS 501.351 provides authority for the Administrator of NDOW to enter into cooperative agreements for the purpose of the management of native wildlife. NRS 503.584 recognizes the state's obligation to conserve and protect imperiled native species. NAC 503.075 extends protected wildlife status to certain native amphibians, including the spotted frog.

Nevada BLM sensitive species are designated by the BLM Nevada State Director and are protected by the policy described for candidate species as a minimum. The BLM shall carry out management, consistent with the principles of multiple use, for the conservation of candidate species and their habitats and shall ensure that actions authorized, funded, or carried out do not contribute to the need to list any of the species as threatened or endangered (BLM Manual section 6840.06 C)..

Under U.S. Department of Interior Secretarial Order 3206 (DOI 1997), the US Fish and Wildlife Service (USFWS) shall coordinate with affected Indian tribes in order to fulfill trust responsibilities and encourage meaningful tribal participation in the conservation of candidate species under the ESA by (1) soliciting and utilizing the expertise of affected Indian tribes when designing and implementing candidate conservation actions to remove or alleviate threats so that the species' listing priority is reduced or listing as endangered or threatened is rendered unnecessary; and (2) providing technical advice and information to support tribal efforts and facilitating voluntary tribal participation in implementation measures to conserve candidate species on Indian lands.

The National Forest Management Act (NFMA) requires the Secretary of Agriculture to specify guidelines for land management plans developed to achieve the goals which provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives [16 USC 1604 (g)(3)(B)]. In accord with this diversify provision, the Secretary promulgated a regulation that provides in part: fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area (36 CFR 2199.19, 1982 edition).

The Forest Service Manual provides specific direction for managing sensitive species on National Forest Lands (Forest Service Manual sections 2670.22, 2670.32). The Forest Service will develop and implement management practices to ensure that species do not become threatened or endangered because of Forest Service actions. The Forest Service will maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands. The Forest is also directed to establish objectives for Federal candidate species, in cooperation with the U.S Fish and Wildlife Service and the States.

Nye County has developed land-use and planning procedures under Nye County Ordinance No. 259 (October 15, 2002) as authorized by NRS §548. Nye County has additional authority under NRS §346 to establish and control areas for preservation of listed wildlife and to encourage in any other manner the preservation of those species or subspecies of wildlife in the county likely to have a significant impact upon the economy and lifestyles of the residents of the county if listed as endangered or threatened. The Board of County Commissioners may impose development fees, purchase, sell, exchange or lease real property or other interests in such properties, or take other actions as authorized by regulation to fulfill these authorities. Nye County exercises these authorities to complement the actions and activities included in the CAS and is participating consistent with its authority as cited. In conducting a review of the status of any species, the Secretary of Interior is required to take into consideration efforts by any State or foreign nation or any political subdivision of a state to protect such species (16 USC 1533 (b)(1)(a)).

This Agreement is subject to and is intended to be consistent with all applicable Federal and State laws and interstate compacts.

## REQUIRED CONSERVATION TASKS AND RESPONSIBILITIES BY COOPERATOR

To meet the goals of this Agreement, the parties agree to undertake specific conservation actions, as described in the Strategy. Table A-1 summarizes tasks and responsibilities of each cooperator as identified in more detail in the attached Strategy. Lead and co-lead responsibilities for specific tasks are identified by agency. Where responsibility for undertaking a specific action has not yet been assigned, the parties agree to determine appropriate actions to implement through modifications to the Strategy based on outcomes of reviews as proposed in the Agreement.

## CONSERVATION SCHEDULE AND ASSESSMENT

Coordinating conservation activities, implementing conservation activities, funding, and reviewing progress will be conducted as follows:

***Coordinating Conservation Activities***

- Administration of the Agreement will be conducted by the TSFTT. The TSFTT will consist of a designated representative from signatories to the Agreement and may include technical and legal advisors and other members as deemed necessary by the signatories.

- The designated leader of the TSFTT is the Director, Natural Resources Office, Nye County.

- The TSFTT will meet at least twice annually to review progress in implementing conservation actions, develop conservation schedules, implement adaptive management, and review budgets.

- The TSFTT will revise the Strategy as needed, and upon agreement of all parties.

- The TSFTT meetings will be open to interested parties. Meeting minutes and progress reports will be distributed to all TSFTT members, technical advisors, and other interested parties, upon request. The duties for taking and developing meeting minutes and developing progress reports will be rotated amongst team members or on a volunteer basis by any team member.

- The TSFTT will provide annual and five-year reports on conservation status and accomplishments under the Agreement, and will review and revise the Strategy on at least a five-year cycle. The duties for developing annual and five-year progress reports will be rotated among team members or on a volunteer basis by any team member.

***Implementing Conservation Activities***

- A total of 10 years is anticipated for completion of all actions identified in the Strategy. The timetable for completion of specific actions is identified in Table S-1 in the Strategy. Where no time for completion is stated, the timing of such actions will be determined by the TSFTT. The timing of certain actions may not be determinable at this time or may be dependent on

the completion of other identified activities.

- As leader of the TSFTT, the Nye County Director of Natural Resources Office will coordinate and monitor progress in achieving outcomes identified in the Agreement.

***Funding Conservation Activities***

- Funding for the Agreement will be provided by a variety of sources. Federal, state, and local sources will pursue and secure funding to initiate actions identified in the Strategy.

- In-kind contributions such as, personnel, field equipment, supplies, etc., will be provided by participating agencies, partners, and volunteers. In addition, each agency will identify specific tasks, responsibilities, and proposed actions/commitments related to their in-kind contributions, as outlined in the Strategy.

- It is understood that all funding commitments made under the Agreement are subject to budget authorization and approval by the appropriate agency or government appropriation.

- An annual progress report and assessment will be completed by the TSFTT using the adaptive management framework, and will be provided to signatories to the Agreement. The assessment will consider the effectiveness of conservation activities in achieving the desired goals and objectives of the Agreement, and whether modifications to the Strategy are needed.

## DURATION OF AGREEMENT

The duration of the Agreement is for 10 years following the date of final signatures. The parties involved will review the Strategy and its effectiveness at least annually to determine whether it should be revised. During the last year in which it is valid, the Agreement must be reviewed and either modified, renewed, or terminated. If some portion of the Agreement cannot be carried out or if cancellation is desired, the party requesting such action must notify the other parties, within 45 days, of the changed circumstances.

Nothing in the Agreement shall be construed as obligating any party hereto in the expenditure of funds, or for the future payment of money, greater than appropriations authorized by law.

## NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE

The CAS is being developed for planning purposes. Before any Federal actions can occur on National Forest or public lands, a determination must be made whether or not NEPA analysis is required. Certain actions by the State of Nevada are not subject to NEPA analysis, with some exceptions where Federal funding is utilized.

## FEDERAL AGENCY COMPLIANCE

During the performance of the Agreement, the participants will abide by the terms of Executive Order 11246 on non-discrimination and will not discriminate against any person because of race, color, religion, gender, or national origin.

No member of, or delegate to, Congress or resident Commissioner, shall be admitted to any share or part of the Agreement, or to any benefit that may arise there from. Nevertheless, this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

| Table A-1. Tasks and Responsibilities by Cooperator | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Objective** | **Task** | **Cooperator** | | | | | | |
| | | **BLM** | **NDOW** | **NNHP** | **NYE CO** | **USFS** | **USFWS** |
| 1 | Determine the overall distribution of Toiyabe spotted frogs. | C | L | P | P | C | P |
| 2 | Assess the abundance of Toiyabe spotted frogs, habitat conditions and existing and potential threats at occupied sites. | C | L | P | P | C | P |
| 3 | Ensure that viable populations and their habitats are managed and enhanced to ensure continued existence of Toiyabe spotted frogs throughout their historic range. | C | C | P | P | C | P |
| 4 | Conduct research that directly supports conservation and management of Toiyabe spotted frogs and their habitat. | C | C | P | P | P | C |
| 5 | Implement through administrative procedures the CAS and incorporate provisions of the strategy into agency planning documents and budgets to ensure the conservation goals and objectives are met in a consistent manner. | All | | | | | |
| 6 | Develop and implement an interagency adaptive management framework partnership. | All | | | | | |
| 7 | Support the CAS by increasing public awareness and appreciation for Toiyabe spotted frogs and their habitat, and by making data and information available to interested parties and decision makers. | All | | | | | |

C= Co-Lead, L= Lead, P=Participant/Cooperator, ALL= All cooperators

## SIGNATURES

In Witness Whereof, the parties have caused this Conservation Agreement for the Toiyabe Subpopulation of the Columbia Spotted Frog to be executed as of the date of the last signature below:

**APPROVED**:

_____

Terry R Crawforth, Director Date
Nevada Department of Wildlife

_____

Glenn H. Clemmer, Program Manager Date
Nevada Natural Heritage Program

_____

Midge Carver Date
Nye County Board of Commissioners

_____

Robert L. Vaught, Forest Supervisor Date
U.S.D.A. Forest Service
Humboldt-Toiyabe National Forest

_____

Robert V. Abbey, State Director Date
U.S.D.I. Bureau of Land Management
Nevada State Office

_____

Steve Thompson, Manager Date
U.S.D.I. Fish and Wildlife Service
California/Nevada Operations Office

# CONSERVATION STRATEGY
## FOR THE
## TOIYABE SUBPOPULATION OF THE
## COLUMBIA SPOTTED FROG (*RANA LUTEIVENTRIS*)

## INTRODUCTION

In 1989, the U.S. Fish and Wildlife Service (USFWS) was petitioned to list the spotted frog (referred to as *Rana pretiosa*) under the Endangered Species Act of 1973, as amended (ESA) (Federal Register 54[1989]:42529). The USFWS ruled on April 23, 1993 that the listing of the spotted frog was warranted and designated it a candidate for listing with a priority 3 for the Great Basin population, but was precluded from listing due to higher priority species (Federal Register 58[87]:27260). The major impetus behind the petition was the reduction in distribution apparently associated with impacts from water developments and the introduction of nonnative species in Nevada.

On September 19, 1997 (Federal Register 62[182]:49401), the USFWS downgraded the priority status for the Great Basin population of Columbia spotted frogs to a priority 9, thus relieving the pressure to list the population while efforts to develop and implement specific conservation measures were ongoing. As of January 8, 2001 (Federal Register 66[5]:1295), however, the priority ranking has been raised back to a priority 3 because of increased threats to the species. This includes Great Basin Columbia spotted frog populations in both northeastern Nevada and the Toiyabe Range.

Other Nevada Columbia spotted frog populations are located in the eastern portion of White Pine County at the Nevada/Utah border and are geographically and genetically associated with the West Desert population in Utah. These frogs were withdrawn from Federal candidate status in April 1998 in a decision based upon the reduction and/or elimination of threats to this population and completion of a conservation agreement (UDWR 1998) which represents a ten year commitment for on-going protection and management.

## PURPOSE

The purpose of this Conservation Strategy (Strategy) is to outline a framework for management actions that will provide for the goal of long-term conservation of the Columbia spotted frog, Toiyabe subpopulation of the Great Basin population (Toiyabe spotted frog), and its habitat in Nevada. This Strategy identifies actions that are necessary to reduce or eliminate threats and provide for the long-term conservation of the Toiyabe spotted frog in Nevada such that protection under the ESA may not be necessary. This Strategy is not intended to restore connectivity between the Toiyabe subpopulation of Columbia spotted frog with other subpopulations within the Great Basin.

The conservation of the Toiyabe spotted frog will require reducing or eliminating threats, improving degraded habitat conditions, and restoring many of the natural functions of associated riparian systems. These habitat protection and restoration efforts will also benefit many other threatened and sensitive species that share these ecosystems (Appendix A). Toiyabe spotted frog conservation activities are likely to benefit the drainages associated with Toiyabe spotted frog habitat by maintaining and improving hydrologic function. Improving hydrologic function will not only benefit Toiyabe spotted frogs, fish, and other wildlife, but also, over the long term, reduce downstream flooding, enhance ranching and haying operations, and expand recreation opportunities.

## DESCRIPTION AND ECOLOGY

The Columbia spotted frog belongs to the anuran family of true frogs, Ranidae. Twenty-three species of ranids are native to the United States. The four true frogs native to Nevada are the Columbia spotted frog (*Rana luteiventris*), the northern leopard frog (*Rana pipiens*), the relict leopard frog (*Rana onca*), and the mountain yellow-legged frog (*Rana muscosa*). Two additional frogs have been successfully introduced into Nevada. These are the red-legged frog (*Rana auranora*) from California and the bullfrog (*Rana catesbeiana*) from east of the Rockies.

Ranids typically are characterized as slim-waisted, long-legged, smooth-skinned jumpers with webbed hind feet and usually with a pair of dorsolateral folds (glandular folds) that extend from behind the eyes to the lower back. Adult Columbia spotted frogs in Nevada measure approximately 5.6 cm from snout to vent, with females being larger than males. Dorsal color and pattern include a light brown, dark brown, or gray, with small spots. Ventral coloration can differ among geographic population units and may range from yellow to salmon, however, very young individuals may have very pale, almost white, ventral surfaces. The throat and the ventral region are sometimes mottled. The head may have a dark mask with a light stripe on the upper jaw and the eyes are turned slightly upward. Male frogs have swollen thumbs with darkened bases.

Columbia spotted frogs are similar to and often are mistaken for leopard frogs. Specific characteristics that distinguish the Columbia spotted frogs from the leopard frog include: rough skin, shorter limbs (the heel of the hind limb when adpressed seldom reaches the nostrils), larger webs between the toes, smaller typanum, and the smooth round eyes which are turned slightly upward. Distinguishing characteristics of the leopard frog are very large conspicuous spots and a mostly white ventral surface compared to the pigmented ventral surfaces of adult Columbia spotted frogs (Stebbins 2003).

Columbia spotted frogs in Nevada are found closely associated with slow-moving or ponded surface waters, in clear waters with little shade (Reaser 1997). Reproducing populations were found in habitats characterized by springs, floating vegetation, and larger bodies of pooled water (e.g., oxbows, lakes, stock ponds, beaver-created ponds, springs, seeps in wet meadows, backwaters) (IDFG et al. 1995, Reaser 1997). A deep silt or muck substrate may be required for hibernation and torpor (Morris and Tanner 1969). Females may lay only one egg mass per

year; yearly fluctuations in the sizes of egg masses are extreme (UDWR 1998). Successful egg production and the viability and metamorphosis of spotted frogs are susceptible to habitat variables such as temperature, depth, and pH of water, cover, and the presence/absence of predators (e.g., fishes and bullfrogs) (Morris and Tanner 1969, Munger et al. 1996, Reaser 1996).

The elimination, fragmentation, and/or degradation of any use area (e.g., adult foraging range, winter hibernaculum, breeding pool) will have a negative proximate effect on local populations units because of the wide use of riparian areas by adult frogs (Munger et al. 1996, Patla and Peterson 1996, Reaser 1996). These effects on metapopulations may result in widespread declines. If corridors between population units are eliminated, dispersal from one population unit to another cannot occur (Lande and Barrowclough 1987, Hovingh 1990, Gotelli 1995).

In the Great Basin, Columbia spotted frogs are found in naturally fragmented habitats that are seasonally xeric, resource-limited, and often ephemeral. Such habitats are sensitive to disturbance, both natural and human-caused (Soulé 1983), thus increasing the chance of stochastic extirpation for its inhabitants (Lande and Barrowclough 1987).

Toiyabe spotted frogs are vulnerable to extinction due to their isolation from other population segments (i.e., lack of habitat connectivity), the relatively arid environment they inhabit and land use patterns that subject their habitat to fragmentation and loss as a consequence of lowered water tables, water diversions, and pond destruction (Reaser 2000). The biogeographic isolation of this population is likely a consequence of changed conditions under post-pluvial (e.g., after late Pleistocene) hydrologic regimes (Madsen et al., 2002).

## SPECIES DISTRIBUTION AND SUBPOPULATIONS

The USFWS acknowledges species-specific genetic and geographic differences in spotted frogs based on Green (1991), Green et al. (1996, 1997) and Bos and Sites (2001), which defines populations in western Washington and Oregon and northeastern California as Oregon spotted frogs (*Rana pretiosa*) and the remainder of the populations as Columbia spotted frogs (*Rana luteiventris*) (Figure 1). Based on further geographic and genetic characterization, spotted frogs in Idaho, eastern Oregon, and Nevada are part of the Great Basin population of Columbia spotted frogs. A small population on the eastern border of White Pine County, Nevada and Toole County, Utah, has been determined through morphometric and allozyme data (Green et al. 1996, 1997) to be part of the West Desert population of Columbia spotted frogs and is not part of the Great Basin population discussed in this document (Figure 2).

Columbia spotted frogs currently are found in central (Nye County) and northeast (Elko and Eureka counties) Nevada, usually persisting at elevations between 5600 and 8700 feet (1700 and 2650 meters), although they have been recorded historically in a broader range (Reaser 2000) (Figure 3). Based upon geography, Columbia spotted frogs in Nevada can be grouped further into three well-defined subpopulations: (1) a large subpopulation located across the Jarbidge and Independence Ranges and the Tuscarora Mountains located in the northern

portion of Elko County and northern portion of Eureka County (Jarbidge-Independence subpopulation); (2) an isolated subpopulation located in the Ruby Mountains in the southeastern portion of Elko county (Ruby Mountains subpopulation); and (3) an isolated subpopulation in the Toiyabe Range of central Nevada in Nye County (Toiyabe Range subpopulation) (Figure 2). For the purposes of this planning effort, spotted frogs located in the Toiyabe Range are termed Toiyabe spotted frogs.

Preliminary genetic analyses of Columbia spotted frogs from the Toiyabe Range suggest that these frogs are distinct from frogs in the Ruby Mountain and Jarbidge-Independence Range population areas (Green et al.1996, 1997). Genetic (mtDNA) differences between the Toiyabe Range frogs and the Ruby Mountain frogs are less distinct than those between the Toiyabe Range frogs and the Jarbidge-Independence Range frogs, but this relationship may be an artifact of similar temporal and spatial isolation (Reaser 2000).

Two elements are considered regarding the potential recognition of a population segment as a species under the Endangered Species Act: discreteness and significance. A population segment could be considered discrete if it is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Scientific evidence would be considered to determine the population segment's significance to the species to which it belongs (e.g., evidence that it differs markedly from other populations of the species in its genetic characteristics). These two elements were considered prior to addressing the Toiyabe subpopulation of spotted frogs for conservation action apart from the Jarbidge-Independence and Ruby Mountains subpopulations.

Toiyabe spotted frogs are geographically isolated from the Ruby Mountains and Jarbidge-Independence Range subpopulations by a large gap in suitable habitat and they represent *R. luteiventris* in the southern-most extremity of its range (Figures 1 and 2). The occurrence of a species at the extremity of its range alone is not sufficient evidence of significance to the species as a whole. However, because the Toiyabe Range and its drainages possess suitable spotted frog habitat that is disjunct from other suitable habitat, this subpopulation may be considered significant to the species as a whole because it occupies a unique and unusual ecological setting and its loss would result in a substantial modification of the species' range.

Toiyabe spotted frogs are found in seven drainages in Nye County, Nevada--the Reese River (Upper and Lower), Cow Canyon Creek, Ledbetter Canyon Creek, Cloverdale Creek, Stewart Creek, Illinois Creek, and Indian Valley Creek (Figure 4). Although historically they occurred also in Lander County, preliminary surveys have found them absent from this area (Figure 3).

Approximately 90 percent of Toiyabe spotted frog habitat on public land in this area is managed by the U.S. Forest Service (USFS), while the remainder is managed by the Bureau of Land Management (BLM) (Figure 4). Additional spotted frog habitat is under Yomba Shoshone tribal management and in private ownership.

**Maps are in a separate file**



## POTENTIAL THREATS TO THE CONTINUED EXISTENCE OF TOIYABE SPOTTED FROGS

The success of any conservation or recovery program depends on reducing or eliminating the threats to the species' existence. The following list of potential threats to the Toiyabe spotted frog is based on the five listing factors for federal listing of a species in Section 4(a)(1) of the ESA. For each of these factors, specific activities potentially threatening the persistence of spotted frog populations are described.

**Factor 1. Habitat Degradation**: The present or threatened destruction, modification, or curtailment of Toiyabe spotted frog habitat or range.

Water Diversions: Water diversions may be a significant threat to Toiyabe spotted frogs where historic populations have been extirpated due to the diversion of water from streams or wetlands for activities associated with livestock grazing, agriculture, and fish culture, particularly where drainages terminate and water becomes a limiting factor. Because of appropriations under State of Nevada water law and land use practices on public, private, and tribal lands, water diversions continue to occur and may be problematic for Toiyabe spotted frog conservation and recovery in some locations, particularly at lower elevations (Reaser 1997; Worthing 1993).

Livestock Grazing: Improper management of livestock grazing in riparian areas may result in (1) loss of vegetation diversity and removal of vegetation that provides bank stabilization, cover from predators, protection from UV radiation, and shade from high temperatures, (2) trampling of frogs or larvae, (3) degradation of water quality by defecation and urination, (4) breakdown of bank overhangs and sedimentation, and (5) re-channelization of water and the resultant desiccation of meadows and ponds and the loss of oxbows and other slow-moving water (IDFG et al. 1995; Reaser 1997). The development of stock ponds for livestock grazing in some spotted frog habitats has been beneficial by creating ponded water. Bull and Hayes (2000) failed to find any

negative impacts of grazing on reproduction and recruitment of Columbia spotted frogs in a lentic system. However, high variability in the results may have masked any grazing effects. Further research on grazing intensity and timing is needed to identify and evaluate potential effects on amphibians (Bull and Hayes 2000). The effects of grazing on woody vegetation is critical because of the importance of woody debris in providing nutrients, structure and pool formation and the streambank stability, shading and micro-climate effect of riparian trees and shrubs. On a stream rested from continuous grazing for 10 years, Claire and Storch (1977) found alders and willows provided 75 percent more shade cover than areas that had been devoid of shrub canopy cover before exclosures. Similar grazing-woody vegetation relationships have been reported by Coffin in litt. (1998), Duff (1979), and Kauffman et al. (1983).

Spring Development: Springs provide a permanent source of water for breeding, feeding, and winter refugia. Springs serve as essential hibernacula by providing deep, protected areas for Toiyabe spotted frogs in cold climates. Springs have been developed for livestock use or for diversion of water for irrigation, rendering the springs unavailable to Toiyabe spotted frog use. The loss of spring habitats such as hibernacula, feeding or breeding sites, or just wet spots in dry years, may be a threat to Toiyabe spotted frogs (Munger et al. 1996).

Roads and Culverts: Construction of roads and culverts can pose a threat to Toiyabe spotted frogs by fragmenting habitat and creating barriers that prevent or curtail frog movement from one portion of their habitat to another (Reh 1989).

**Factor 2. Overutilization**: Overutilization for commercial, recreational, scientific, or educational purposes.

Over-exploitation of amphibians for commercial markets is known for many species (Jennings and Hayes 1984). However, collection of Columbia spotted frogs in Nevada, other than controlled and low-level sampling for scientific purposes, is not currently known to occur.

**Factor 3. Disease and Predation**: Disease, predation, competition and hybridization.

Disease: Although a diversity of microbial species are naturally associated with amphibians, it is generally accepted that they are rarely pathogenic to amphibians except under stressful environmental conditions. Chytridiomycosis is an emerging panzootic fungal disease in the United States (Fellers et al. 2001). Clinical signs of amphibian chytridiomycosis (chytrid)

include abnormal posture, lethargy, and loss of righting reflex. Gross lesions, which are usually not apparent, consist of abnormal epidermal sloughing and epidermal ulceration; hemorrhages in the skin, muscle, or eye; hyperemia of digital and ventrum skin, congestion of viscera. Diagnosis is by identification of characteristic intracellular flask-shaped sporangia and septate thalli within the epidermis. Chytrid can be identified in some species of frogs by examining the oral discs of tadpoles which may be abnormally formed or lack pigment (Fellers et al. 2001). Chytrid has been found in Columbia spotted frog populations in Idaho and Utah. To date chytrid fungus has not been found in spotted frog populations in Nevada (Amy pers. comm 2002; Hatch pers. comm 2002). The potential exists for biological survey and monitoring crews working with any aquatic species, or on other related activities including habitat enhancement and research, to transmit chytrid or other pathogens between frog populations if appropriate protocols are not used to clean field equipment and outerwear.

Predation - Fishes: It is generally concluded that salmonid (native and non-native) and centrarchid fishes in aquatic systems can preclude the presence of native frogs or significantly decrease reproductive success by feeding on young frogs and frog eggs (Pilliod and Peterson 1997; Knapp and Matthews 2000a, 2000b), particularly where habitats have been altered or introduced fish species have become established. Both native and nonnative salmonids occur within habitats occupied by Toiyabe spotted frogs and under certain circumstances may pose a significant threat to their continued existence.

Predation -Bullfrogs: Nonnative bullfrogs (*Rana catesbeiana*) are widely distributed in aquatic habitats throughout the Great Basin. No bullfrogs have been reported at spotted frog-inhabited sites in Nevada (Moyle 1973; Hammerson 1982; Hayes and Jennings 1986; Amy pers. comm 2002; Hatch pers. comm 2002).

Predation - Snakes: According to Reaser (1997) the wandering terrestrial garter snake (*Thamnophis elegans vagrans*) is the most probable source of predation on spotted frogs in the Toiyabe Range. Mortality can occur directly through consumption or indirectly through injury to the frogs by the snakes (Jennings et al. 1992; K. Hatch unpublished data.)

**Factor 4. Inadequate Regulatory Mechanisms**: The inadequacy of existing regulatory mechanisms.

A review of the existing laws and regulations has determined that regulatory mechanisms are adequate to protect Toiyabe spotted frogs in combination with the actions identified in the CAS. The spotted frog is afforded regulatory

protection under Nevada State Law as a protected amphibian (NAC 503.075). Classification as a Candidate Species under ESA mandates an enhanced level of review and consultation relative to actions by Federal agencies. Under USFS and BLM policy guidance Candidate and sensitive/special status species receive an enhanced level of review relative to proposed actions.

**Factor 5. Other Factors**: Other natural or manmade factors affecting its continued existence.

Climate: Several dry years may cause a reduction in the number of suitable sites available to Toiyabe spotted frogs and affect the connectivity of extant sites. Local extinctions from habitats that in normal years are available as frog habitat may eliminate source populations for recolonization. Dry years are likely to exacerbate the effects of other threats, increasing the possibility of stochastic extinction of subpopulations by reducing their size and their connectedness to other subpopulations (IDFG et al. 1995).

The Toiyabe spotted frog population is considered a disjunct, relict population occurring in small, isolated patches of suitable habitat remaining from the last ice age (Green et al. 1996; Munger et al. 1996). Because source populations of this species are now narrowly limited, they are particularly vulnerable to habitat degradation and population declines and resultant local extirpation and eventual extinctions (Brown 1978).

Ultraviolet-B (UV-B) radiation: UV-B radiation has been implicated as an important factor in the global decline of amphibians, especially those with low levels of the DNA repair enzyme photolyase (Blaustein 1994; Kiesecker and Blaustein 1995; Davidson et al. 2001). Evidence from recent experiments indicate that spotted frogs show variable, but high levels of the enzyme. Patterns of population decline in Nevada at low elevation sites, where UV-B effects should be minimal, do not support UV-B as a causative factor (Reaser 1997).

Toxins: Toxic chemicals released into the environment from activities such as mining, agriculture, mosquito abatement, and herbicide or pesticide application can have lethal and sublethal effects on amphibians (Bishop 1991; Hall and Henry 1992; Davidson et al. 2001). No data have been reported on the relationship between agricultural toxins/mosquito abatement and amphibians in Nevada, but it remains a potential threat. The effects on spotted frogs of toxins released as a result of non-native trout stream treatment require further study. Gill-breathing tadpoles are most likely to be negatively affected (e.g., killed outright), but the effects of rotenone on frogs and other wet-skinned, cutaneous breathing amphibians need further study and should

be regarded as a potential threat to spotted frog populations (Chandler 1982; Fontenet et al. 1994; McCoid and Bettoli 1996).

LCT Recovery Actions: Four LCT recovery actions have the potential to adversely affect spotted frogs: 1) the re-establishment of LCT into historic habitats which are also occupied by spotted frogs; 2) chemical control of non-native fish species; 3) use of electrofishing for LCT population monitoring; and 4) transmission of diseases and pathogens by field crews.

1. Re-establishment of LCT into historic habitats which are occupied by spotted frogs and presently do not have fish predators may adversely affect spotted frogs. It is believed that LCT and spotted frogs naturally evolved together. However, the re-establishment of a historically present native fish predator, in altered or degraded habitats and in combination with other threats, could negatively affect individual frogs and frog populations.

2. The use of piscicides such as rotenone or antimycin for chemical control of non-native fish species in LCT habitats could negatively affect spotted frog populations as described in the toxin section above depending on the timing of treatments and the specific chemicals used.

3. Electrofishing is known to result in injury and mortality to salmonids and their eggs (Fredenberg 1992; Meyer and Miller 1993; Hollender 1994; Roach 1996; Kocovsky et al. 1997). As vertebrates, spotted frogs could suffer similar injury and mortality as fish. Presently, there is no scientific literature to confirm or deny this hypothesis.

4. The movement of field crews from one location to another could potentially transmit diseases and pathogens to uninfected frog populations, as described above under the Diseases section, if appropriate disease transmission protocols are not implemented and followed.

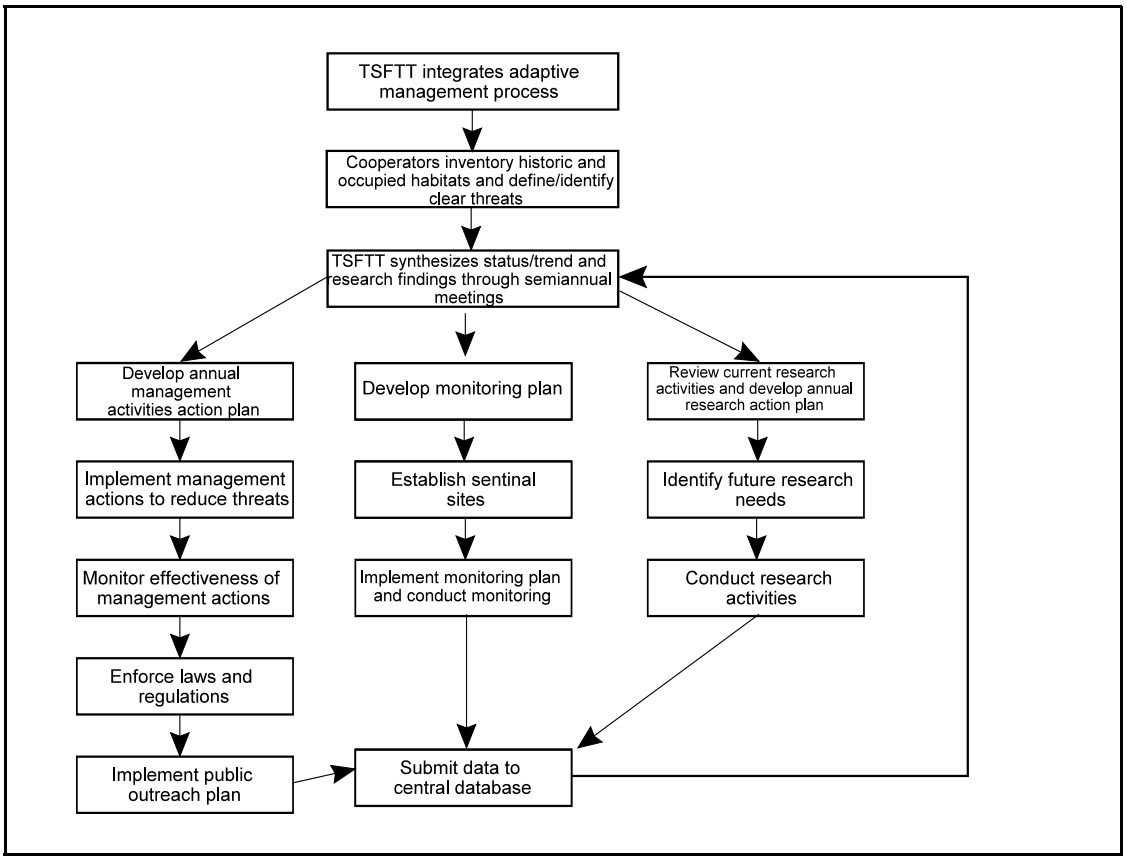
## ADAPTIVE MANAGEMENT

This Strategy depends upon the successful implementation of adaptive management and its principles. Adaptive management is designed to bring new information immediately into new management direction. All cooperators agree and recognize, consistent with the goals of this Strategy, that monitoring actions and conservation measures implemented through the CAS will be conducted experimentally consistent with the concepts of adaptive management. The effectiveness of all conservation measures and monitoring methods will be periodically reviewed and evaluated by the TSFTT. Based on such evaluation, appropriate modifications to strategies and actions will be made to ensure scientific rigor and the efficacy of conservation measures. It is critical that the signatories provide the resources necessary to ensure successful

implementation of adaptive management and its principles (Figure 5.)

The essential steps of the CAS adaptive management strategy are summarized as follows:

Step 1. Implement CAS conservation objectives, goals and strategies.
Step 2. Initiate distribution and threat inventories, and habitat monitoring program.
Step 3. Review CAS conservation goals, objectives and strategies and adjust as necessary based on updated information.
Step 4 (a). Prioritize locations for implementation of conservation actions *and/or*
Step 4 (b). Identify and prioritize research needs.
Step 5 (a). Initiate site-specific actions to reduce or eliminate threats *and/or*
Step 5 (b). Complete identified research projects
Step 6. Establish monitoring plan to determine effectiveness of conservation actions.
Step 7. Analyze and evaluate monitoring and research results to determine progress towards attainment of conservation objectives.




Step 8. Return to Step 3.

Figure 5. ADAPTATIVE MANAGEMENT FLOW CHART

## CONSERVATION GOALS, OBJECTIVES, STRATEGIES AND ACTIONS

### Conservation Goals

1. To reduce threats to Toiyabe spotted frogs and their habitat to the extent necessary to prevent population units from becoming extirpated throughout all or a portion of their historic range.

2. To maintain, enhance, and restore a sufficient number of population units of Toiyabe spotted frogs and the habitat to support them throughout their historic range to ensure their continued existence.

### Conservation Objectives, Strategies and Actions to Be Implemented

The following conservation objectives, strategies, and actions must be implemented to achieve the conservation goals and objectives for the Toiyabe spotted frog. Conservation objectives, strategies, and actions are listed in a step-down form in which the objectives are stepped down

to strategies and strategies are stepped down to specific actions.

## OBJECTIVE 1. DETERMINE THE OVERALL DISTRIBUTION OF TOIYABE SPOTTED FROGS

**Strategy 1.** Adopt a standard protocol for inventory of Toiyabe spotted frogs.

Action 1. Develop a standard protocol for presence-absence surveys.

Action 2. Implement a standard protocol for presence-absence surveys.

**Strategy 2.** Determine the distribution of Toiyabe spotted frogs on Federal land.

Action 1. Assess the presence or absence of Toiyabe spotted frogs at all known historic sites.

Action 2. Develop a method for identifying potential sites.

Action 3. Assess the presence or absence of Toiyabe spotted frogs at potential sites.

Action 4. Create a detailed map of historic and potential sites using GPS and GIS.

Action 5. Maintain a detailed map of historic and potential sites using GPS and GIS.

**Strategy 3.** Determine the distribution of Toiyabe spotted frogs on non-federal land.

Action 1. Identify known and potential Toiyabe spotted frog sites from existing information.

Action 2. Secure permission from willing non-federal landowners or controlling authorities to access property.

Action 3. Assess the presence or absence of Toiyabe spotted frogs at all accessible sites.

Action 4. Create a detailed map of these sites using GPS and GIS.

Action 5. Maintain a detailed map of these sites using GPS and GIS.

Action 6. Evaluate the significance of Toiyabe spotted frog sites and habitat on

non-federal lands to the conservation of Toiyabe spotted frogs.

**Strategy 4.** Prevent the spread of frog diseases and pathogens.

Action 1. Develop and adopt a protocol for aquatic field crews, to prevent the spread of frog diseases and pathogens among populations of Toiyabe spotted frogs.

Action 2. Require aquatic field crews to implement adopted protocol for Toiyabe spotted frog and other aquatic species inventory and monitoring activities.

Action 3. Incorporate disease and pathogen protocols into research and collection permits issued under State and Federal agency authorities.

**OBJECTIVE 2. ASSESS THE ABUNDANCE OF TOIYABE SPOTTED FROGS, HABITAT CONDITIONS, AND EXISTING AND POTENTIAL THREATS AT OCCUPIED SITES.**

**Strategy 1.** Monitor occupied sites on accessible lands to assess abundance of Toiyabe spotted frogs.

Action 1. Develop a process for prioritizing and monitoring occupied sites on a periodic basis to develop long term trend data.

Action 2. Monitor occupied sites using developed prioritization protocol for long term trend data collection.

Action 3. Establish sentinel sites and conduct annual monitoring to collect long term trend data.

**Strategy 2.** Assess and evaluate habitat conditions at occupied and potential sites on accessible lands.

Action 1. Prioritize occupied and potential sites and develop a process for assessing, evaluating and categorizing habitat conditions at each site on a periodic basis.

Action 2. Incorporate standardized habitat monitoring protocols into animal survey and monitoring activities identified under Objectives 1 and 2.

Action 3. Identify the range of habitat conditions which are optimum for Toiyabe spotted frog persistence.

**Strategy 3.** Identify and assess the existing and potential threats at each occupied site.

Action 1. Identify the threats at each occupied site on a periodic basis.

Action 2. Assess the degree and immanency of each threat for each site.

**Strategy 4.** Create and maintain a database for data and information collected.

Action 1. Create a database for the storage of data and other information collected.

Action 2. Maintain a database for data and information collected.

**OBJECTIVE 3. ENSURE THAT VIABLE POPULATIONS AND THEIR HABITATS ARE MANAGED AND ENHANCED TO ENSURE THE CONTINUED EXISTENCE OF TOIYABE SPOTTED FROGS THROUGHOUT THEIR HISTORIC RANGE.**

**Strategy 1.** Identify, prioritize and implement site-specific actions to reduce the existing and potential threats to Toiyabe spotted frogs on Federal lands as identified in **OBJECTIVE 2.**

Action 1. Develop a detailed monitoring plan for Toiyabe spotted frog populations and habitats.

Action 2. Develop a Toiyabe Spotted Frog Species Management Plan.

Action 3. Manage, restore, and/or enhance existing riparian and spring ecosystems to benefit all life stages of Toiyabe spotted frogs.

Action 4. Identify, restore and/or enhance, and manage areas of historic unoccupied and potential Toiyabe spotted frog habitat within the presumed historic range of the species to benefit all life stages of Toiyabe spotted frogs.

Action 5. Identify and manage dispersal corridors, including terrestrial upland habitats, important to Toiyabe spotted frogs to maximize ecological connectivity between occupied/restored Toiyabe spotted frog habitats.

Action 6. Implement activities identified in Actions 1 through 5 on an annual

basis as defined in the Annual Action Plans developed by the TSFTT (Objective 6, Strategy 1, Action 6).

**Strategy 2.** Encourage non-Federal landowners to conserve viable populations of Toiyabe spotted frogs and their habitat.

Action 1. Identify potential locations and cooperators for conservation efforts on non-federal lands.

Action 2. Provide technical assistance to willing landowners to develop Candidate Conservation Agreements with Assurances

Action 3. Work with landowners to identify and use available public and private (NGO) incentive programs, including Partners for Fish and Wildlife and the Wetlands Reserve Program, to protect and restore Toiyabe spotted frog habitat.

**OBJECTIVE 4. CONDUCT RESEARCH THAT DIRECTLY SUPPORTS CONSERVATION AND MANAGEMENT OF TOIYABE SPOTTED FROGS AND THEIR HABITAT.**

**Strategy 1.** Identify and recommend projects to address known research needs and incorporate data into the Conservation Strategy through the adaptive management process.

Action 1. Incorporate identified research needs into TSFTT annual action plan commitments (Objective 6, Strategy 1, Action 6).

Action 2. Utilize research findings in annual program assessments and adaptive management reviews of the Strategy.

**Strategy 2.** Implement and maintain a process for identifying future research needs and incorporating research projects into the Strategy.

Action 1. Assess research needs on an ongoing basis.

Action 2. Develop a prioritized list of research needs.

Action 3. Maintain a prioritized list of research needs.

Action 4. Incorporate research needs into the Strategy by identifying lead entity(s), budget and time schedule.

Action 5. Implement proposed research actions as approved by the TSFTT.

Action 6. Incorporate data findings into the Strategy through the adaptive management process to ensure that goals and objectives are ultimately met.

**OBJECTIVE 5. IMPLEMENT THROUGH ADMINISTRATIVE PROCEDURES THE CAS AND INCORPORATE PROVISIONS OF THE CAS AND THIS STRATEGY INTO AGENCY PLANNING DOCUMENTS AND BUDGETS TO ENSURE THE CONSERVATION GOALS AND OBJECTIVES ARE MET IN A CONSISTENT MANNER.**

**Strategy 1.** Enforce and administer existing policies, laws and regulations.

Action 1. Review existing policies, laws and regulations at least biennially and assess their adequacy to protect Toiyabe spotted frogs and their habitat.

Action 2. Maintain the Toiyabe spotted frog on protected or sensitive species lists of cooperator agencies.

Action 3. Conduct section 7 consultation under ESA for Toiyabe spotted frog projects that may affect federally listed species.

Action 4. Periodically evaluate species status under section 4 of the ESA.

**Strategy 2.** Identify and implement non-site specific actions, policies, and procedures to reduce the existing and potential threats to Toiyabe spotted frogs as identified in Objective 3.

Action 1. Identify non-site specific actions, policies, and procedures to reduce the existing and potential threats to Toiyabe spotted frogs on Federal and non-Federal lands.

Action 2. Implement non-site specific actions, policies, and procedures to reduce the existing and potential threats to Toiyabe spotted frogs.

**Strategy 3.** Review forest, land, and resource management plans to determine if plan objectives are in conformance with spotted frog conservation goals, objectives, strategies, and actions.

Action 1. Consider and incorporate CAS conservation goals, objectives,

strategies, and actions that would require an amendment to the Humboldt/Toiyabe Land and Resource Management Plan during the forest plan revision process scheduled for completion in 2006/2007.

Action 2. Consider and incorporate amendments to BLM management plan documents as appropriate and necessary to implement any of the CAS conservation goals, objectives, strategies, and actions, as those plan documents are scheduled for review and revision.

Action 3. Maximize retention of Federal lands containing Toiyabe spotted frog or which are potential frog habitat.

**Strategy 4.** Incorporate goals, objectives, strategies and actions of the CAS into agency budget requests and based on funding, revise Strategy as necessary to update implementation schedule.

Action 1. Conduct annual workload analysis to determine the budgetary and biological staffing needs to accomplish conservation actions identified in the implementation schedule.

Action 2. Provide managers with annual conservation action proposals for funding consistent with agency planning and budget processes.

Action 3. Pursue alternative funding strategies and partnerships to supplement agency work programs as opportunities are identified and available.

**Strategy 5.** Ensure implementation of the CAS through the TSFTT partnership process.

Action 1. Implement team responsibilities as defined in the CAS implementation strategy.

**OBJECTIVE 6. DEVELOP AND IMPLEMENT AN INTERAGENCY ADAPTIVE MANAGEMENT FRAMEWORK PARTNERSHIP.**

**Strategy 1.** Develop an interagency framework and process that ensures adaptive management is incorporated into the implementation of the Strategy.

Action 1. Review Strategy progress and implement any changes through an adaptive management process as needed.

Action 2. Monitor the effectiveness of each action on a set schedule to determine if the expected results are being attained within the given

time frame.

Action 3. Modify the strategy to implement alternative measures to ensure that goals and objectives are ultimately met.

Action 4. Ensure that data from inventory, monitoring, and research efforts are incorporated into the Strategy through the adaptive management framework.

Action 5. Modify and/or update the implementation schedule yearly.

Action 6. Develop an annual action plan of site-specific management commitments by cooperator, which are keyed to objectives of the Strategy and Species Management Plan, research findings, and adaptive management review.

**OBJECTIVE 7. SUPPORT THE CAS BY INCREASING PUBLIC AWARENESS AND APPRECIATION FOR TOIYABE SPOTTED FROGS AND THEIR HABITAT, AND BY MAKING DATA AND INFORMATION AVAILABLE TO INTERESTED PARTIES AND DECISION MAKERS.**

**Strategy 1.** Encourage citizen and landowner participation in CAS implementation.

Action 1. Develop brochures and other materials on the Toiyabe spotted frog and its management needs for dissemination to the public for educational purposes.

Action 2. Distribute informational materials as developed to the general public, recreational users, private landowners and to other customers who may be involved in actions affecting Toiyabe spotted frogs and their habitat.

Action 3. Develop educational and informational materials on Toiyabe spotted frogs and their habitat/management needs for distribution through other media sources including newspapers and television.

Action 4. Develop a program to encourage volunteer public and private land conservation efforts.

**Strategy 2.** Develop a process for collecting and maintaining data and information for distribution to stakeholders and decision makers.

Action 1. Create a depository for storage of data from inventory, monitoring, and research efforts.

Action 2. Maintain the depository.

Action 3. Ensure data and information developed through actions of this strategy are available to and shared among cooperators.

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Objective 1. DETERMINE THE OVERALL DISTRIBUTION OF TOIYABE SPOTTED FROGS | ✓ | | | NDOW, USFS, BLM | | |
| **Strategy 1. Adopt a standard protocol for inventory of Toiyabe spotted frogs.** | | | | | | |
| Action 1. Develop a standard protocol for presence or absence surveys. | ✓ | | Prior to 1 | BRRC | DONE | |
| Action 2. Implement a standard protocol for presence or absence surveys. | ✓ | | 1 | NDOW, USFS, BLM | DONE | |
| **Strategy 2. Determine the distribution of Toiyabe spotted frogs on Federal land.** | | | | | | |
| Action 1. Assess the presence or absence of Toiyabe spotted frogs at all known historic sites. | ✓ | | 3 - 4 | NDOW, USFS, BLM | $12K | TBD |
| Action 2. Develop a method for identifying potential sites. | ✓ | | 3 | NDOW, USFS, BLM | in 2.1 | TBD |
| Action 3. Assess the presence or absence of Toiyabe spotted frogs at potential sites. | | ✓ | 4 - 5 + | NDOW, USFS, BLM | in 2.1 | TBD |
| Action 4. Create a detailed map of historic and potential sites using GPS and GIS. | ✓ | | 2 | NDOW, USFS, BLM, NNHP | TBD | AB |
| Action 5. Maintain a detailed map of historic and potential sites using GPS and GIS. | | ✓ | ALL | NNHP | TBD | AB |
| **Strategy 3. Determine the distribution of Toiyabe spotted frogs on non-federal land.** | | | | | | |
| Action 1. Identify known and potential Toiyabe spotted frog sites from existing information. | ✓ | | DONE | NDOW, USFS, BLM | DONE | |
| Action 2. Secure permission from willing non-federal landowners or controlling authorities to access property. | ✓ | | 2 | NDOW, USFS, BLM | in 3.3 | TBD |
| Action 3. Assess the presence or absence of Toiyabe spotted frogs at all accessible sites. | ✓ | | 2 - 3 | NDOW, USFS, BLM | $5K | TBD |
| Action 4. Create a detailed map of these sites using GPS and GIS. | ✓ | | 1 - 3 | NDOW, USFS, BLM, NNHP | TBD | AB |
| Action 5. Maintain a detailed map of these sites using GPS and GIS. | | ✓ | ALL | NNHP | TBD | AB |
| Action 6. Evaluate the significance of Toiyabe spotted frog populations and habitat on non-federal lands to the conservation of spotted frogs. | ✓ | | 3 | TSFTT | in 5.5.1 | AB |
| **Strategy 4. Prevent the spread of frog diseases and pathogens.** | | | | | | |

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Action 1. Adopt a protocol for aquatic field crews to prevent the spread of frog diseases and pathogens between populations of Toiyabe spotted frogs. | ✓ | | 1 | NDOW, USFS, BLM | in 5.5.1 | AB |
| Action 2. Require aquatic field crews to implement adopted protocol. | | ✓ | 1 | NDOW, USFS, BLM | $2K p/a | AB |
| Action 3. Incorporate disease and pathogen protocols into research and collection permits | ✓ | | 1 | NDOW, USFS, FWS | $2K | AB |
| Objective 2. ASSESS THE ABUNDANCE OF TOIYABE SPOTTED FROGS, HABITAT CONDITIONS AND EXISTING AND POTENTIAL THREATS AT OCCUPIED SITES. | | ✓ | | NDOW, USFS, BLM | | |
| **Strategy 1. Monitor occupied sites on accessible lands to assess abundance of Toiyabe spotted frogs.** | | | | | | |
| Action 1. Develop a process for prioritizing and monitoring occupied sites on a periodic basis to develop long term trend data. | ✓ | | 1 - 2 | ALL | $5K p/a | TBD |
| Action 2. Monitor occupied sites using developed prioritization protocol for long term trend data collection. | | ✓ | 2 - 10 | NDOW, USFS, BLM | $5K p/a | TBD |
| Action 3. Establish sentinel sites and conduct annual monitoring to collect long term trend data. | | ✓ | ALL | NDOW, USFS, BLM | $10K p/a | TBD |
| **Strategy 2. Assess and evaluate habitat conditions at potential and occupied sites on accessible lands.** | | | | | | |
| Action 1. Prioritize sites and develop a process for assessing, evaluating and categorizing habitat conditions at each site on a periodic basis. | ✓ | | 2 | ALL | TBD | TBD |
| Action 2. Incorporate standard habitat monitoring protocols into animal monitoring and survey activities | ✓ | | 2 - 3 | ALL | TBD | TBD |
| Action 3. Identify the range of habitat conditions which are optimum for Toiyabe spotted frog persistence. | ✓ | | 3 - 4 | ALL | TBD | TBD |
| **Strategy 3. Identify and assess the existing and potential threats at each occupied site.** | | | | | | |
| Action 1. Identify the threats at each occupied site on a periodic basis. | | ✓ | TBD | ALL | in 2.1.1 | TBD |
| Action 2. Assess the degree and immanency of each threat for each site. | | ✓ | ALL | ALL | in 5.5.1 | AB |
| **Strategy 4. Create and maintain a database for data and information collected.** | | | | | | |
| Action 1. Create a data base for the storage of data and information collected. | ✓ | | DONE | NDOW, USFS, BLM, NNHP | DONE | |
| Action 2. Maintain a data base for data and information collected. | | ✓ | ALL | NNHP | TBD | AB |

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Objective 3. ENSURE THAT VIABLE POPULATIONS AND THEIR HABITATS ARE MANAGED AND ENHANCED TO ENSURE THE CONTINUED EXISTENCE OF TOIYABE SPOTTED FROGS THROUGHOUT THEIR RANGE. | | ✓ | | NDOW, USFS, BLM | | |
| **Strategy 1. Identify and implement site-specific actions to reduce the existing and potential threats to Toiyabe spotted frogs on Federal lands as identified in Objective 2.** | | | | | | |
| Action 1. Develop a detailed monitoring plan for Toiyabe spotted frog populations and habitats. | ✓ | | 2 | NDOW | $4K | SWCG |
| Action 2. Develop a Toiyabe spotted frog Species Management Plan | ✓ | | 2 | NDOW | $7K | SWCG |
| Action 3. Manage, restore, and/or enhance existing riparian and spring ecosystems to benefit all life stages of Toiyabe spotted frogs. | | ✓ | ALL | USFS, BLM | TBD | TBD |
| Action 4. Identify, restore and/or enhance, and manage areas of historic unoccupied and potential Toiyabe spotted frog habitat within the presumed historic range of the species to benefit all life stages of Toiyabe spotted frogs. | | ✓ | ALL | USFS, BLM, NDOW | TBD | TBD |
| Action 5. Identify and manage dispersal corridors, including terrestrial upland habitats, important to spotted frogs to maximize ecological connectivity between occupied/restored Toiyabe spotted frog habitats. | | ✓ | 2 - 10 | USFS, BLM | TBD | TBD |
| Action 6. Implement activities identified in Actions 1 through 5 on an annual basis as defined in the Annual Action Plans developed by the TSFTT | | ✓ | ALL | ALL | IN 2.1.1 - 2.1.5 | TBD |
| **Strategy 2. Encourage non-Federal landowners to conserve viable populations of Toiyabe spotted frogs and their habitats.** | | | | | | |
| Action 1. Identify potential locations and cooperators for conservation efforts on non-federal lands. | ✓ | | 2 | ALL | $2K | AB |
| Action 2. Provide technical assistance to willing landowners to develop Candidate Conservation Agreements with Assurances | | ✓ | ALL | USFWS | $3K p/a | TBD |
| Action 3. Work with landowners to identify and use available public and private incentive programs to protect and restore Toiyabe spotted frog habitat. | | ✓ | ALL | USFWS, NDOW | $3K p/a | TBD |
| Objective 4. CONDUCT RESEARCH THAT DIRECTLY SUPPORTS CONSERVATION AND MANAGEMENT OF TOIYABE SPOTTED FROGS AND THEIR HABITAT. | | ✓ | | NDOW, USFS, BLM, USFWS | | |
| **Strategy 1. Identify and recommend projects to address known research needs and incorporate data into the Conservation Strategy through the adaptive management process.** | | | | | | |

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Action 1. Incorporate identified research needs into TSFTT annual action plan commitments | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 2. Utilize research findings in annual program assessments and adaptive management reviews of conservation strategy. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| **Strategy 2. Implement and maintain a process for identifying future research needs and incorporating research projects into the Strategy.** | | | | | | |
| Action 1. Assess research needs on an ongoing basis. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 2. Develop a prioritized list of research needs. | ✓ | | 1 | TSFTT | in 5.5.1 | AB |
| Action 3. Maintain a prioritized list of research needs. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 4. Incorporate research needs into Strategy by identifying lead entity(s), budget and time schedule. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 5. Implement proposed research actions as approved by the TSFTT. | | ✓ | ALL | ALL | TBD | TBD |
| Action 6. Incorporate data findings into the Strategy through the adaptive management process to ensure that goals and objectives are ultimately met. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Objective 5. IMPLEMENT THROUGH ADMINISTRATIVE PROCEDURES THE CAS AND INCORPORATE PROVISIONS OF THE STRATEGY INTO AGENCY PLANNING DOCUMENTS AND BUDGETS TO ENSURE THE CONSERVATION GOALS AND OBJECTIVES ARE MET IN A CONSISTENT MANNER. | | ✓ | | ALL | | |
| **Strategy 1. Enforce and administer existing policies, laws and regulations.** | | | | | | |
| Action 1. Review existing policies, laws and regulations at least biennially and assess their adequacy to protect Toiyabe spotted frogs and their habitat | | ✓ | ALL | ALL | $5K | AB |
| Action 2. Maintain the Toiyabe spotted frog on agency protected or sensitive species lists. | | ✓ | ALL | USFWS, USFS, BLM, NDOW, NNHP | $1K | AB |
| Action 3. Consult on Section 7 of the ESA as necessary. | | ✓ | TBD | USFWS, USFS, BLM | TBD | AB |
| Action 4. Periodically evaluate species status under Section 4 of the ESA | | ✓ | TBD | USFWS | TBD | AB |
| **Strategy 2. Identify and implement non-site specific actions, policies, and procedures to reduce or eliminate existing or potential threats to Toiyabe spotted frogs as identified in Objective 3.** | | | | | | |

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Action 1. Identify non-site specific actions, policies, and procedures to reduce or eliminate existing or potential threats to Toiyabe spotted frogs. | ✓ | | 1 - 3 | USFS, BLM | TBD | AB |
| Action 2. Implement non-site specific actions, policies, and procedures to reduce or eliminate existing or potential threats to Toiyabe spotted frogs. | ✓ | | 1 - 3 | USFS, BLM | TBD | AB |
| **Strategy 3. Review forest, land, and resource management plans periodically for conformance with spotted frog conservation goals, objectives, strategies, and actions.** | | | | | | |
| Action 1. Incorporate CAS conservation goals, objectives, strategies, and actions, as appropriate, during the Forest Land and Resource Management Plan revision. | ✓ | | 4 - 5 | USFS | $2K | AB |
| Action 2. Amend BLM management planning documents as appropriate and necessary to implement CAS conservation goals, objectives, strategies and actions as those planning documents are scheduled for review. | | ✓ | TBD | BLM | TBD | AB |
| Action 3. Maximize retention of Federal lands containing Toiyabe spotted frogs or which are potential Toiyabe spotted frog habitat. | | ✓ | ALL | USFS,BLM | TBD | AB |
| **Strategy 4. Incorporate goals, objectives, strategies and actions of the CAS into agency budget requests, and based on funding, revise Strategy as necessary to update implementation schedule.** | | | | | | |
| Action 1. TSFTT representatives will conduct annual workload analysis to determine the budgetary and biological staffing needs to accomplish conservation actions identified in the implementation schedule. | | ✓ | ALL | ALL | TBD | AB |
| Action 2. TSFTT representatives will provide their respective managers with annual conservation action proposals for funding consistent with agency planning and budget processes. | | ✓ | ALL | ALL | TBD | AB |
| Action 3. TSFTT representatives will pursue alternative funding strategies and partnerships to supplement agency work programs as opportunities are identified and available. | | ✓ | ALL | ALL | $3K p/a | AB |
| **Strategy 5. Ensure implementation of the CAS through the TSFTT partnership process** | | | | | | |
| Action 1. Implement team responsibilities as defined in the CAS implementation strategy | | ✓ | ALL | ALL | $22.5K p/a | TBD |
| Objective 6. DEVELOP AND IMPLEMENT AN INTERAGENCY ADAPTIVE MANAGEMENT FRAMEWORK PARTNERSHIP. | | ✓ | | ALL | | |
| **Strategy 1. Develop an interagency framework process that ensures adaptive management is incorporated into the implementation of the Strategy.** | | | | | | |

Table S-1. Conservation Strategy Implementation Schedule

| Objectives, Strategies, and Actions | Window for Completion | | Target completion Year(s) | Responsible Parties | Projected Cost | Funding Source |
|---|---|---|---|---|---|---|
| | YRS 1-5 | YRS 1-10 | | | | |
| Action 1. Review Strategy progress and implement any changes through an adaptive management process as needed.. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 2. Monitor the effectiveness of each action on a set schedule to determine if the expected results are being attained within the given time frame. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 3. Modify the strategy to implement alternative measures to ensure that goals and objectives are ultimately met. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 4. Ensure that data from inventory, monitoring, and research efforts are incorporated into the Strategy through the adaptative management framework. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 5. Modify and/or update the implementation schedule table yearly. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Action 6. Develop an annual action plan of site-specific management commitments by cooperator, which are keyed to objectives of the Strategy and Species Management Plan, research findings, and adaptive management review. | | ✓ | ALL | TSFTT | in 5.5.1 | AB |
| Objective 7. SUPPORT THE CAS BY INCREASING PUBLIC AWARENESS AND APPRECIATION FOR TOIYABE SPOTTED FROGS AND THEIR HABITAT, AND BY MAKING DATA AND INFORMATION AVAILABLE TO INTERESTED PARTIES AND DECISION MAKERS. | | ✓ | | ALL | | |
| **Strategy 1. Encourage citizen and landowner participation in CAS implementation.** | | | | | | |
| Action 1. Develop brochures and other materials on the Toiyabe spotted frog and its management needs for dissemination to the public for education purposes. | ✓ | | 1 - 3 | ALL | $6K | FWS,FS, NDOW |
| Action 2. Distribute informational materials to the general public, recreational users, private landowners and to other customers who may be involved in actions affecting Toiyabe spotted frogs and their habitat. | | ✓ | 3 - on | ALL | TBD | AB |
| Action 3. Develop educational and informational materials on Toiyabe spotted frogs and their habitat/management needs for distribution through other media sources including newspapers and television. | | ✓ | ALL | FWS, NDOW, USFS | $5K | AB |
| Action 4. Develop a program to encourage volunteer public and private land conservation efforts. | ✓ | | 2 | FWS, NDOW, USFS, BLM | TBD | AB |
| **Strategy 2. Develop a process for collecting and maintaining data and information and distribution to stakeholders and decision makers.** | | | | | | |
| Action 1. Create a depository for storage of GIS data on Toiyabe spotted frog distribution. | ✓ | | DONE | NNHP | DONE | |

| Table S-1. Conservation Strategy Implementation Schedule | | | | | | |
|---|---|---|---|---|---|---|
| **Objectives, Strategies, and Actions** | **Window for Completion** | | **Target completion Year(s)** | **Responsible Parties** | **Projected Cost** | **Funding Source** |
| | **YRS 1-5** | **YRS 1-10** | | | | |
| Action 2. Maintain the depository. | | ✓ | ALL | NNHP | TBD | AB |
| Action 3. Ensure data and information developed through actions of this strategy are be available to and shared among cooperators. | | ✓ | ALL | ALL | IN 7.2.1 & 7.2.2 | AB |

**NOTES:**

**Target Completion Year(s):** Where possible target years for completion over the 10 year life of the CAS have been identified. Actions which will occur continually over the life of the CAS have been identified as ALL. In some cases actions may occur periodically and the specific timing or sequence cannot yet be determined (TBD).

**Responsible Parties:** Identified cooperators are the Lead or Co-lead agencies for this action. Other cooperators may assist or participate as appropriate.

**Projected Cost:** Where possible an estimated cost for an action has been identified as total cost, or per year (p/a). Where a cost cannot be specifically identified at this time it is indicated as TBD.

**Funding Source:** Where possible specific funding sources have been identified. In some cases action implementation funding will be dependent on grants or specific future funding requests and has been identified as TBD. Administrative actions and some field activities are not separable to specific individual costs but are included in anticipated general budget authorization requests and/or work programs for identified cooperators (AB).

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